Area of Benefit

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DRAFT Nexus Study
North Richmond Area of Benefit Program

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1. Introduction

1.1 Background and Purpose

The purpose of the North Richmond Area of Benefit (AOB) Program is to help fund improvements to the County's roadway, bicycle and pedestrian facilities needed to accommodate travel demand generated by new land development within the unincorporated portion of this AOB.

Contra Costa County has various methods for financing transportation improvements. One of the methods is the AOB Program. The AOB Program collects funds from new development in the unincorporated portion of the AOB to finance a portion of the transportation improvements associated with travel demand generated by that development. Fees are differentiated by type of development in relationship to their relative impacts on the transportation system. The intent of the AOB program is to provide an equitable means of ensuring that future development contributes its proportional share of the cost of transportation improvements, so that the County's General Plan Circulation policies and quality of life can be maintained.

One of the objectives of the County General Plan is to relate new development directly to the provision of community facilities necessary to serve that new development. Accordingly, there is a mechanism in place to provide the funding for the infrastructure necessary to serve that development. The North Richmond AOB Program is a fee mechanism providing funds to construct transportation improvements to serve new residential, commercial and industrial development within the AOB. Requiring that all new development pay a transportation improvement fee ensures that it participates fairly in the cost of improving the transportation system. This Program applies only to new development within the unincorporated portions of North Richmond.

Each new development project or expansion of an existing development will generate new travel demand for all travel modes. Where the existing transportation system is inadequate to meet future needs based on new development, improvements are required to meet the new demand. The proposed infrastructure improvements within the road right-of-way should integrate best management practices for roadway design that facilitate a reduction in vehicle emissions, especially emissions from truck traffic. Roadway design that is sensitive to air quality is consistent with the County's General Plan policies on air quality as well as sustainable community strategies. The purpose of this development program is to determine improvements that will ultimately be needed to serve estimated future development and to require the developers to pay a fee to fund its proportional share of the cost of these improvements. Because the fee is based on the relative impact of new development on the transportation system and the costs of the necessary improvements to mitigate this impact, the fee amount is roughly proportional to the development impact. This Nexus Study establishes this impact and mitigation relationship to new development and the basis for the fee amount.

1.2 North Richmond AOB

On January 11, 1994, the Board of Supervisors adopted Ordinance No. 94-3 to establish the North Richmond AOB, and to establish transportation mitigation fees to be imposed on new development within the AOB, to improve capacity and safety of the arterial road network in the unincorporated area of North Richmond.The purpose of this Nexus Study is to provide the technical basis for a comprehensive update of the North Richmond AOB Program. The focus of the updated program is to support a multi-modal transportation system in the North Richmond AOB that serves the expected future demand based on changes in regional and local land use projections, planned and approved development projects, and associated changes to capital improvements and updated cost estimates.

This report documents the analytical approach for determining the nexus between the fees, the local impact created by new development in the North Richmond AOB, and the transportation improvements to be funded with fee revenues to mitigate transportation impacts. A traffic and fair-share cost analysis was conducted to equitably distribute the costs of the necessary improvements to developments that cause the impacts, in accordance with the provisions of the Mitigation Fee Act.[1] The most up-to-date versions of the analytical tools and techniques available at the time this study commenced were used to ensure the highest level of consistency with current standards.

The North Richmond AOB boundary, which was established in 1985, is shown in **Figure 1.**

2. Evaluation of Current AOB Program

The current North Richmond AOB Program was last updated in 1994 and has four projects shown in **Table 1**. Since 1994, improvements have been implemented on Parr Boulevard, Pittsburg Avenue and Fred Jackson Way. However, none of the projects are completed to the ultimate configuration. Thus, these four projects have been carried over to the new project list. The 2017 update of the North Richmond AOB Program has included a needs analysis to update this project list along with new project cost estimates, which are described in **Sections 3, 4 and 5** of this Nexus Study.

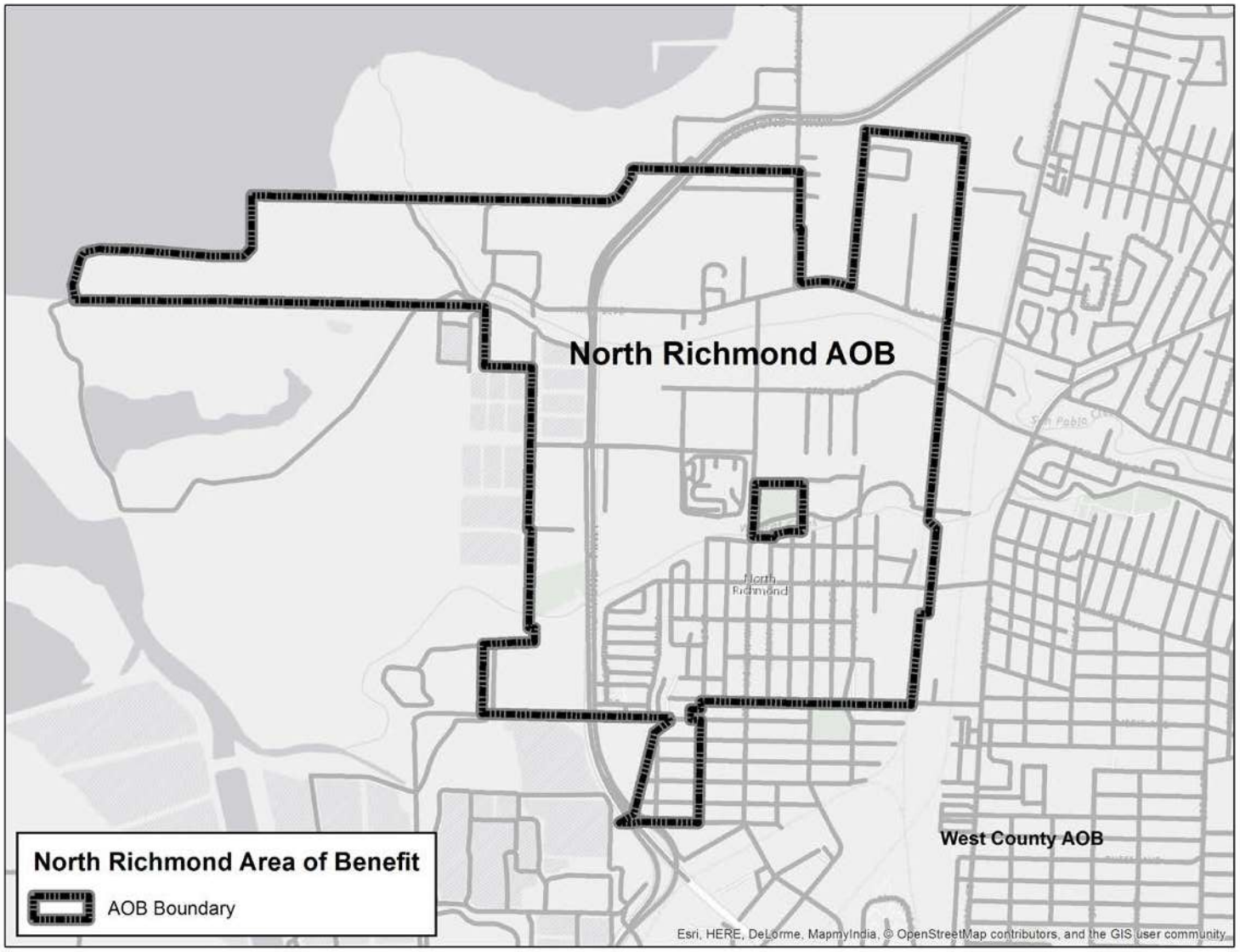
Table 1: 1994 Project List for North Richmond AOB Program

	Roadway	Location	Project Description
1	Parr Boulevard	From Richmond Parkway to AT&SF railroad tracks	Widen road to provide a middle turning lane and 8' shoulders
2	Brookside Drive	Not specified	Widen roadway to 32' interim pavement width; acquire ultimate R/W of 68' at some locations; ultimate road and R/W widths (48/68 ft)
3	Pittsburg Avenue	Not specified	Widen existing road to 32' interim pavement width & extend easterly to 3rd Street (now called Fred Jackson Way) along property lines; ultimate road and R/W widths = (48/68 ft)
4	3rd Street (now called Fred Jackson Way)	Not specified	Widen existing road to 48' & realign road to either (a) meet Parr Boulevard or Goodrick (bridge over San Pablo Creek); or (b) intersect Goodrick north of Parr; ultimate R/W= 68'

Source: Development Program Report for North Richmond AOB, 1994

[1] California Government Code, Sections 66000 through 66026.

Figure 1: North Richmond AOB Boundary



The current AOB Program uses "peak hour factors" to allocate trips by land use types based on Institute of Transportation Engineers (ITE) trip generation rate estimates for the evening (PM) peak hour based on the amount of traffic coming in and out of development's entrances. This Nexus Study refines this approach to reflect current best practices for impact fee programs when estimating the impact of new development on the transportation system.

The use of simple trip generation rates tends to over-estimate the traffic impact of retail development on the overall roadway system. The average length of trips coming in and out of a new residential development is longer than trips coming in and out of a retail development. Furthermore, studies show that about 25 to 50 percent of the trips that will go in and out of a new retail development will already be traveling on roadways near that development, and therefore are "pass-by" or "diverted" trips, not "new trips" to the surrounding roadway system. All of the trips going to and from a new residential unit are "new trips."

To integrate best practices for the current fees, the updated North Richmond AOB Program will instead use estimates of vehicle-miles of travel (VMT) added by new development. The VMT rates are calculated by multiplying the trip rate for a land use type by its average trip length and a percentage to reflect "pass-by trips" versus "new trips." The calculation of fee rates based on this methodology is discussed in **Section 4** of this study.

3. Determination of AOB Development Potential

The transportation needs analysis and allocation of improvement costs for the North Richmond AOB is based on the countywide travel demand model developed by the Contra Costa Transportation Agency (CCTA) using a 2040 horizon year. The calculation of fees is based on the following general land use categories and associated measurement units that are used as a basis for the land use inputs in CCTA's travel demand model:

Land Use Type	Units
Single-Family	Dwelling units (DU)
Multi-Family	Dwelling units (DU)
Commercial/Retail	Jobs
Office	Jobs
Industrial	Jobs

CCTA's latest land use estimates of existing conditions and 2040 forecasts of new development by Traffic Analysis Zones (TAZs) in the AOB were summarized and reviewed with County Planning staff. Based on that review, adjustments were made and the resulting growth estimate for the AOB is summarized in **Table 2**. The table converts the estimates of jobs for nonresidential land uses used by the CCTA's model to estimates of building square feet used in the AOB fee program.

Table 2: Summary of Estimated Development 2010 to 2040 Growth

Land Use Category	Units	DUE per Unit	Units			DUEs		
			2010	2040	Growth	2010	2040	Growth
Single-Family	DU	1.00	743	824	81	743	824	81
Multi-family	DU	0.61	339	411	72	208	252	44
Total	**DU**		**1,082**	**1,235**	**153**	**951**	**1,076**	**125**
Retail	Jobs		53	104	51			
Office	Jobs		115	253	138			
Industrial	Jobs		453	5,323	4,870			
Total	**Jobs**		**621**	**5,680**	**5,059**			
Retail	1,000 sq. ft.	0.00142	27	52	26	38	74	36
Office	1,000 sq. ft.	0.00115	32	70	38	36	80	44
Industrial	1,000 sq. ft.	0.00091	272	3,194	2,922	247	2,906	2,659
Total	**1,000 sq. ft.**		**330**	**3,315**	**2,985**	**321**	**3,060**	**2,739**
					Total:	**1,272**	**4,136**	**2,864**
					Proportion of DUE Growth to the total DUEs in 2040:	2,864/4,136 = **0.6924**		

Source: DKS Associates, 2017

Notes:

Land Use	Assumed Square Feet per Job
Retail	500
Office	275
Industrial	600

4. Transportation Needs Analysis

Defining the transportation needs and project list for the North Richmond AOB involved the following steps:

1. Collecting traffic count data (intersections and roadway segments)
2. Identifying existing deficiencies, including level of service (LOS) and roadway standard deficiencies
3. Preparing travel demand forecasts of 2040 conditions
4. Conducting transportation system analysis to identify improvement needs
5. Identifying pedestrian and bicycle facilities/improvements
6. Preparing a draft AOB project list
7. Presenting analysis and findings at a neighborhood outreach meeting to obtain input on the draft project list
8. Finalizing project list

The key technical tasks used to determine the transportation improvements needed to accommodate new development within the AOB and select a project list are described in **Sections 4.1 through 4.6**.

4.1 Traffic Count Data

Traffic count data is required to determine existing deficiencies and to support the future year roadway/intersection needs analysis. Traffic counts were collected on weekdays in May 2014 on major roadway segments and intersections within the AOB (see **Tables 3 and 4**).

4.2 Existing Deficiencies

The technical methods and standards used to identify the impact of new development on roadways and intersections are described in **Section 4.4** below. The same methods and standards are used to identify existing deficiencies in the roadway network. When an existing deficiency is identified, it affects how the cost of an improvement is allocated to new development. New development can only fund its fair share of the total cost of an improvement not associated with correcting an existing deficiency (see **Section 6**).

4.3 Travel Demand Forecasting

The transportation needs analysis and allocation of improvement costs were based on CCTA's travel demand model using a 2040 horizon year and the development assumptions summarized in **Table 2**. Before its use, the output of the CCTA travel demand model for existing conditions was compared to existing traffic count data in the AOB area and some adjustments were made to the model within and near the AOB to improve its accuracy and detail.

4.4 Roadway/Intersection Analysis

This section describes the analysis used to determine the roadway improvements needed to accommodate new development within the AOB.

Signal Warrants

Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. A planning-level signal warrant analysis based on traffic volumes was conducted to determine if the traffic signals would be warranted at study intersections under existing and future (2040) conditions. If one or more of the signal warrants are met, signalization of the intersection may be recommended.

Level of Service

The needs analysis for the North Richmond AOB Program used the level of service (LOS) standards in the County's General Plan, which has different standards for different area types, based on land use types. In the North Richmond Area, which is composed of the area type "urban", the acceptable LOS is high-LOS D or better. LOS is calculated separately for intersections and roadway segments. Intersection LOS analysis is based on average vehicle delay and analysis methods recommended by the Highway Capacity Manual (Transportation Research Board, 2010). Existing intersection LOS was evaluated using the signal timing plans currently in use. Analysis of future intersection LOS assumes that signal timing settings are adjusted as necessary to serve future traffic demand. In some cases, this results in an improvement in LOS over existing conditions.

Roadway segment LOS analysis compares traffic levels with roadway segment capacities determined by the number of travel lanes and the roadway type and bases its standard on volume-to-capacity ratio (v/c ratio). The intersection and roadway segment LOS analyses for the AM and PM peak hours are summarized in **Tables 3 and 4** as well as **Figures 2 and 3.**

Table 3: Intersection Level of Service Analysis

	Intersection	Area Type[3]	Control Type	LOS Standard[3]	Delay Standard (seconds)	2014				2040			
						AM		PM		AM		PM	
						Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Richmond Pkwy / Gertrude Ave	Urban	Signal	High D	≤ 55.0	14.4	B[2]	19.2	B[2]	**57.4**	**E[2]**	**62.8**	**E[2]**
2	Richmond Pkwy / Pittsburg Ave	Urban	Signal	High D	≤ 55.0	21.1	C[2]	**69.2**	**E[2]**	12.5	B[2,4]	**64.6**	**E[2]**
3	Richmond Pkwy / Parr Blvd	Urban	Signal	High D	≤ 55.0	45.6	D	**62.2**	**E**	36.7	D	32.8	C[4]
4	Kelsey St / 5th St - Chesley Ave[1]	Urban	TWSC	High D	≤ 35.0	13.1	B	16.7	C	17.5	C	**>50**	**F**
5	Fred Jackson Wy / Parr Blvd[1]	Urban	TWSC	High D	≤ 35.0	9.8	A	11.6	B	12.6	B	13.0	B

[1] Minor stop-controlled with LOS for worst approach reported
[2] HCM 2010 result not available; HCM 2000 result displayed
[3] Contra Costa County General Plan, 2005
[4] Assumes optimization of signal timing
LOS highlighted in gray does not meet County standards
Source: DKS Associates, 2017

Table 4: Roadway Segment Level of Service Analysis

Roadway	Location	Area Type[1]	LOS Standard[1]	V/C Ratio Standard[1]	2014				2040			
					AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
					V/C	LOS Range[2]	V/C	LOS Range[2]	V/C	LOS Range[2]	V/C	LOS Range[2]
Richmond Pkwy	Between Gertrude Ave and Hensley St	Urban	High D	≤ 0.90	0.73	C	**0.94**	**E**	**0.91**	**E**	**1.09**	**F**
	Between Pittsburg Ave and Wildcat Creek Trail	Urban	High D	≤ 0.90	0.71	C	0.88	D	0.76	D	**0.99**	**E**
	Between Parr Blvd and Brookside Dr	Urban	High D	≤ 0.90	0.74	C	0.84	D	0.79	D	**0.95**	**E**
	Between Goodrick Ave and Parr Blvd	Urban	High D	≤ 0.90	0.64	A-B	0.82	D	0.67	A-B	**0.94**	**E**
Parr Blvd	Between Richmond Pkwy and Fred Jackson Wy	Urban	High D	≤ 0.90	0.10	A-B	0.12	A-B	0.16	A-B	0.12	A-B
Brookside Dr	Between Niemeyer Rd to railroad tracks	Urban	High D	≤ 0.90	0.13	A-B	0.13	A-B	0.21	A-B	0.11	A-B
Pittsburg Ave	Between Golden Gate Ave and Central Ave	Urban	High D	≤ 0.90	0.16	A-B	0.20	A-B	0.24	A-B	0.27	A-B

[1] Contra Costa County General Plan, 2005
[2] Highway Capacity Manual, 1994
Source: DKS Associates, 2017

Figure 2: Existing Levels of Service in North Richmond AOB

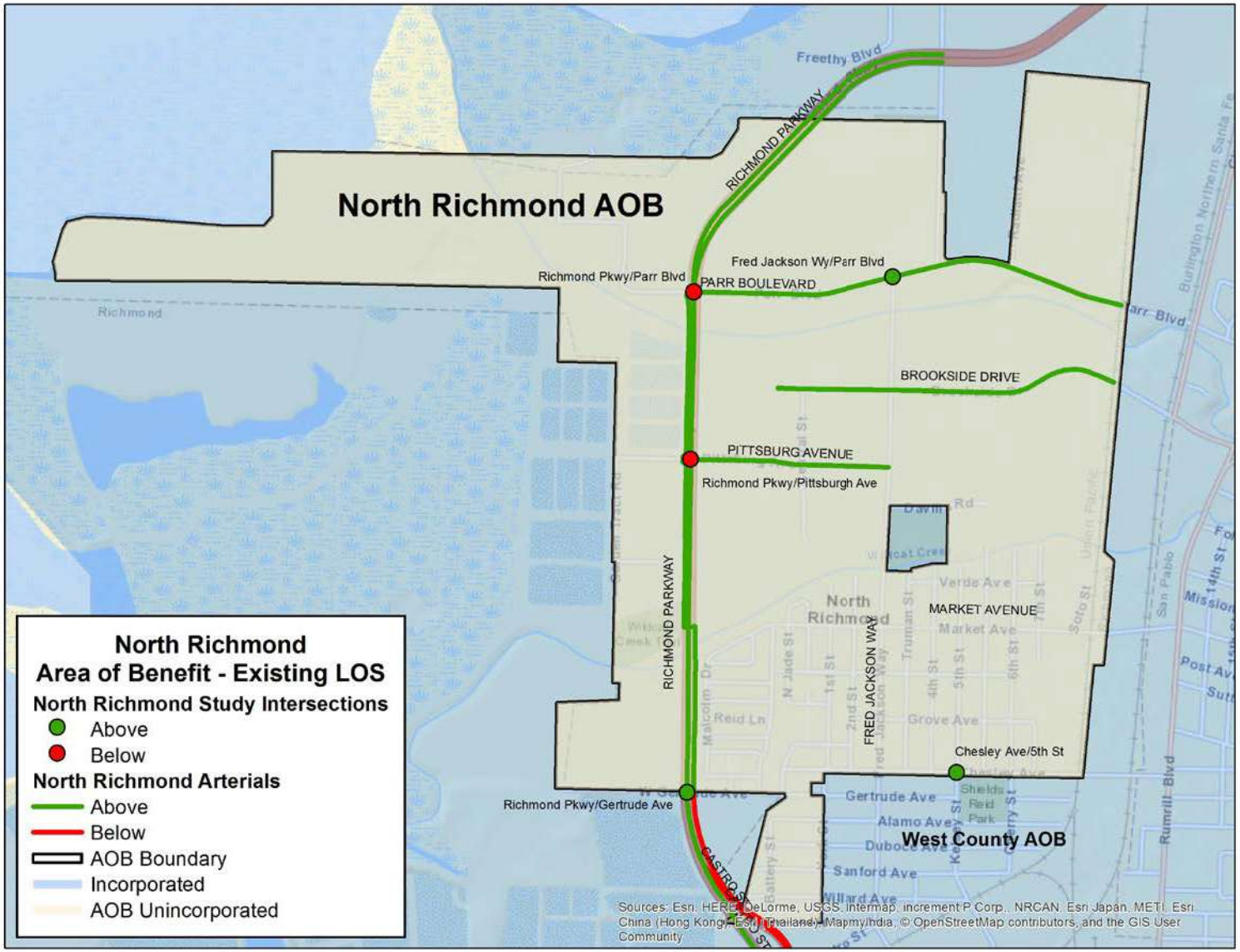
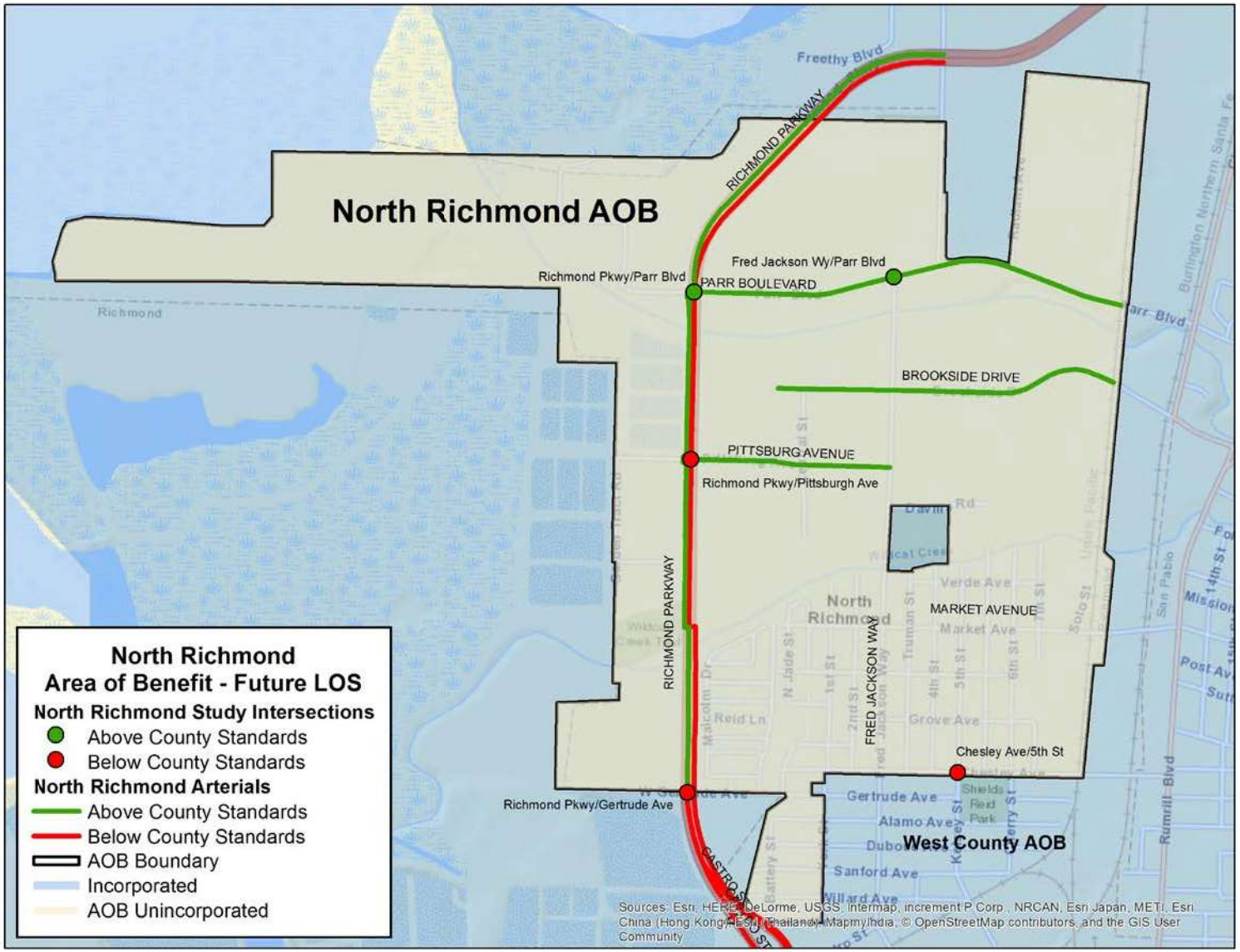


Figure 3: 2040 Levels of Service in North Richmond AOB



Roadway Pavement Width Standards

Many of the County's two-lane roads within the North Richmond AOB will not have LOS problems but volume increases on narrow roads within the AOB are a safety issue that should be addressed in the AOB Program. Providing adequate roadway width, including adding shoulders to two-lane roadways, would increase safety as traffic increases and shoulders would provide a bicycle lane/walkway. FHWA recommends that rural roadways that carry more than 2,000 average daily vehicles (ADT) should have 5 to 6 foot wide shoulders. Contra Costa County's standards for two-lane roadways, shown in **Table 5**, call for shoulders on roadways with more than 1,000 ADT.

Table 5: Two Lane Rural/Lane Widths Contra Costa Public Works Department Standard Plans

Average Daily Traffic	Shoulder Backing (ft.)	Shoulder (ft.)	Lane (ft.)
< 200	0	1	11
< 400	2	2	11
< 1,000	2	4	12
< 3,000	2	5	12
< 6,000	2	6	12
> 6,000	0	8	12

Source: Contra Costa County Public Works Department Standard Plans, 2014

4.5 Pedestrian and Bicycle Infrastructure Needs Analysis

New development also necessitates changes to roadway design that are not geared toward increases in vehicle capacity or improvements to vehicle safety. New development generates non-vehicular trips (pedestrian and bicycle) that will need to be accommodated by improving roadway shoulders to provide bicycle lanes and pedestrian walkways. On roadways that require improvements based on the roadway/intersection analysis described above, pedestrian and bicycle facilities would be implemented to the extent that they are represented in the County's current standard roadway designs.

Pedestrian and bicycle infrastructure improvements may also reduce vehicular congestion by shifting trips from autos to these alternative modes. The County's General Plan has goals to encourage the use of transit (Goal 5-I) and to reduce single-occupant auto commuting and encourage walking and bicycling (Goal 5-J). The General Plan also has policies to encourage all efforts to develop alternative transportation systems to reduce peak period traffic congestion (Policy 5-23) and to encourage the use of alternative forms of transportation, such as pedestrian, bicycle and transit modes in order to provide basic accessibility to those without access to a personal automobile and to help minimize automobile congestion and air pollution.

4.6 Selected Project List

A draft list of capital improvements to the transportation system in the AOB Programs was prepared. The project list is focused on the major transportation system in the County's General Plan (see Sections 5.6 and 5.8 of the General Plan, which describe the major roadway, transit, bikeway and pedestrian facilities). This list generally consists of the following types of projects:

1. Installing traffic signals at intersections that meet warrants for their installation
2. Adding turn lanes at intersections to meet LOS standards
3. Adding lanes on roadway segments to meet LOS standards
4. Upgrading roadways to be consistent with County design standards and General Plan policies
5. Making improvements to improve safety for all modes of transportation

6. Providing appropriate pedestrian and bicyclist facility improvements
7. Establishing preferred routes for truck traffic to direct heavy vehicles away from residential neighborhoods

The draft project list was prepared to meet the needs defined above and then was presented to the North Richmond Municipal Advisory Council who approved the list shown in **Table 6** and **Figure 4.**

5. Improvement Cost Estimates

Planning-level cost estimates were prepared based on conceptual designs for each project (**Table 6**) and the design could change based on future studies. The estimates for roadway segment improvements are based on implementing the County's design standards (for roadway cross-sections) by facility type and number of lanes. The cost estimates reflect the known issues, such as creek crossings, relocation of major known utilities, etc. Typical excavation quantities were used except in areas where significant excavation was identified. The cost estimating does not have geotechnical or survey support information. Thus unknowns (such as rock excavation, removal of unsuitable material, relocation of unseen utilities, etc.) were assumed in a project contingency percentage.

The cost estimates include the following appropriate percentages that are key elements in the implementation of each project:

- Project contingencies,
- Survey, design, and construction management,
- Environmental mitigation,
- Right-of-way acquisition

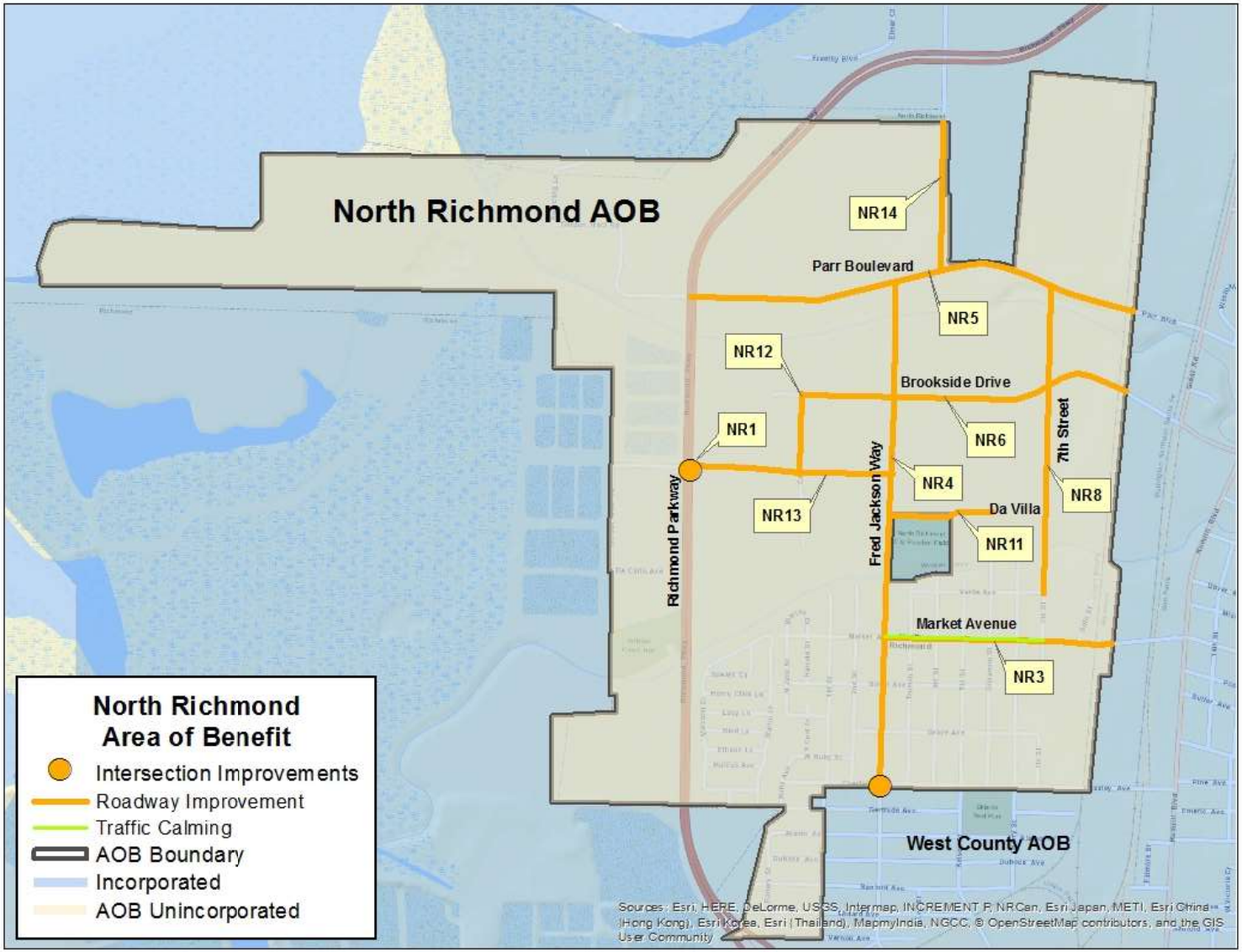
The cost estimates for each of the selected projects for funding by the North Richmond AOB, shown in **Table 6**, are provided in **Appendix A**.

Table 6: Selected North Richmond AOB Project List

Roadway/ Project	Location	Recommended Project	Project Number	Basis for Recommendation	Estimated Total Cost
Pittsburg Avenue	Intersection with Richmond Parkway	Intersection Improvements	NR1	Contra Costa County General Plan LOS Standards	$1,183,000
Market Avenue Complete Streets Project	Between Fred Jackson Way and the AOB Boundary (east of railroad tracks)	Pedestrian Improvements	NR3	CCTA CTPL	$6,544,000
	Between Fred Jackson Way and 7th Street	Traffic Calming Including Truck Traffic	NR10	Community Input	
Fred Jackson Way Complete Streets Project	Between Chesley Avenue and Parr Boulevard	Pedestrian and Bicycle Improvements	NR4/NR7	CCTA CTPL	$5,345,000
	Intersection with Chesley Avenue	Traffic Calming Including Truck Traffic	NR9	Previous AOB List	
Parr Boulevard Complete Streets Project	Between Richmond Parkway and AT&SF railroad tracks	Safety, Bicycle and Pedestrian Improvements	NR5	Previous AOB List	$5,527,000
Brookside Drive Complete Streets Project	Between Central Street and AT&SF railroad tracks	Safety, Bicycle and Pedestrian Improvements	NR6	Previous AOB List	$4,892,000
Truck Bypass	Between Market Avenue and Parr Boulevard	Truck Route	NR8	Community Input	$28,453,000
Secondary Access to Verde Elementary School	To be determined	Circulation and Safety Improvements	NR11	Community Input	$2,597,000
Central Street	Between Brookside Drive and Pittsburg Avenue	Safety, Bicycle and Pedestrian Improvements	NR12	Industrial Growth	$1,013,000
Pittsburg Avenue	Between Richmond Parkway and Fred Jackson Way	Safety, Bicycle and Pedestrian Improvements	NR13	Industrial Growth	$2,208,000
Goodrick Avenue	Between Parr Boulevard and AOB Boundary (550' S of Richmond Parkway)	Safety, Bicycle and Pedestrian Improvements	NR14	Industrial Growth	$1,695,000
Chesley Avenue	Between Fred Jackson Way and AOB Boundary	Traffic Calming	NR15	Industrial Growth	$143,000

Source: DKS Associates, 2017

Figure 4: Selected Projects for North Richmond AOB Program



6. Basis for Allocating Costs to New Development

This section describes the process used to allocate transportation improvement costs to new development in the North Richmond AOB and the estimated transportation mitigation fees that result from this analysis.

The allocation of costs of roadway and intersection improvements in the AOB is based on answering the following questions:

- Is there an existing deficiency?
- Would the improvement project be required without new development?
- Who uses the roadway/intersection?

The allocation of costs is based on estimates of who will use the roadways or intersections that require improvements based on 2040 traffic forecasts. The allocation of improvement costs is based on the percentage of trips on the roadways and intersections from 1) existing development, 2) new development in the North Richmond AOB and 3) new development outside the AOB (referred to as through traffic). An increase in through traffic represents an increase in trips that both start and end outside the AOB and pass through the AOB. **Table 7** summarizes the estimated percentages for the selected AOB project list. The methods used to allocate costs are described below.

6.1 Improvements to Meet County LOS Standards

Costs for improvements needed to address LOS impacts (either intersection or roadway LOS) are allocated to new development in the North Richmond AOB using one of three methods:

1. For a roadway segment or intersection that is currently operating at an acceptable LOS but would operate at an unacceptable LOS in 2040, the entire cost of improving that segment or intersection is allocated to new development if there is no increase in through traffic. This method did not apply to any improvements on the North Richmond project list.
2. If the current and future LOS conditions are the same as described under #1 but there is an increase in the amount of through traffic then new development within the AOB is not allocated the full cost of the improvement. Instead, new development within the AOB is allocated a percentage of costs based the number of new trips on a roadway segment or intersection that have either their origin or destination within the AOB divided by the total amount of trips from new development. The remaining percent of costs, reflecting new trips that have neither their origin nor destination in the AOB, are not allocated to development in the AOB. This method did not apply to any improvements on the North Richmond project list.
3. For a roadway segment or intersection that currently does not meet the County's LOS standards (an existing deficiency), the percent cost share for new development in the AOB is equal to the number of new trips on a roadway segment that have either their origin or destination within the AOB divided by all trips on that roadway, both from existing and new development (including through traffic). This method was used to allocate costs for improvements on Pittsburg Avenue, Parr Boulevard, Brookside Drive, and 7th Street.

6.2 Widening to Meet Roadway Pavement Width Standards

The allocation of costs to improve roadway to County cross-section standards is similar to the allocation of cost for improvements to address LOS impacts. For a roadway segment that is currently below the traffic volume thresholds shown in **Table 5** but would exceed those thresholds by 2040, the entire cost of improving that segment to the County standard will be allocated to new development. If that roadway has an increase in the amount of through traffic then new development within the AOB is allocated a

percentage of costs based on the number of trips associated with new development within the AOB. This method did not apply to any improvements on the North Richmond project list.

For a roadway segment that currently has a traffic volume above the volume thresholds in **Table 5** and does not meet the County's applicable cross-section standards (an existing deficiency), the percent cost share for new development in the AOB is equal to the number of new trips on a roadway segment that have either their origin or destination within the AOB divided by all trips on that roadway, both from existing and new development. This method did not apply to any improvements on the North Richmond project list.

Table 7: Cost Allocation Analysis for North Richmond AOB Project List - Level of Service Improvements

Roadway	Location	Recommended Project	Existing Conditions		2040 Conditions		Percent of 2040 Volume				Percent of 2014 to 2040 Growth		Percent Allocated to AOB
			Peak Period Volume[1]	LOS	Peak Period Volume[1]	LOS[2]	Existing Local	Local Growth	Existing Through	Through Growth	Local	Through	
Pittsburg Avenue	Intersection with Richmond Parkway	Intersection Improvements	12,077	E	14,772	E	3.25	7.32	78.50	10.92	40.15	59.85	7.32
Parr Boulevard	Between Richmond Parkway and AT&SF railroad tracks	Safety Improvements	830	A-B	1,483	A-B	15.07	33.91	40.88	10.14	76.99	23.01	33.91
Brookside Drive	Between Central Street and AT&SF railroad tracks	Safety Improvements	515	A-B	968	A-B	17.84	40.17	35.34	6.65	85.79	14.21	40.17

[1] 4-hour peak period
[2] LOS without improvement
Percent allocated to AOB is based on percentage shaded in gray

Source: DKS Associates, 2017

6.3 Bikeway, Walkway, and Other Improvements

Bicycle and pedestrian improvements in the North Richmond AOB are localized improvements serving trips that have their origin or destination within the AOB rather than through trips. Lack of bicycle and pedestrian facilities is an existing deficiency in the AOB; hence the improvements will benefit both existing and future residents. Since the improvements will serve the existing and future bicycle and pedestrian demand, the cost of those projects allocated to new development will equal the new development's proportional share of the total future development (existing plus new development) in the North Richmond AOB (measured in Dwelling Unit Equivalents). Likewise, the truck bypass project will serve existing and future truck traffic and will benefit the entire AOB by drawing truck traffic away from other routes. This method was used to allocate costs for improvements described in **Table 8**.

Table 8: Cost Allocation Analysis for North Richmond AOB Project List – Pedestrian and Bicycle Infrastructure Improvements

Roadway/Project	Location	Recommended Project	Percent Allocated to AOB*
Market Avenue Complete Streets Project	Between Fred Jackson Way and the AOB Boundary (east of railroad tracks)	Pedestrian Improvements, Traffic Calming	69.24
Fred Jackson Way Complete Streets Project	From Chesley Avenue to Parr Boulevard	Pedestrian and Bicycle Improvements, Traffic Calming	69.24
Truck Bypass	Between Market Avenue and Parr Boulevard	Truck Route	69.24
Secondary Access to Verde Elementary School	To be determined	Circulation and Safety Improvements	69.24
Central Street	Between Brookside Drive and Pittsburg Avenue	Safety, Bicycle and Pedestrian Improvements	69.24
Pittsburg Avenue	Between Richmond Parkway and Fred Jackson Way	Safety, Bicycle and Pedestrian Improvements	69.24
Goodrick Avenue	Between Parr Boulevard and AOB Boundary (550' S of Richmond Parkway)	Safety, Bicycle and Pedestrian Improvements	69.24
Chesley Avenue	Between Fred Jackson Way and AOB Boundary	Traffic Calming	69.24

*Percentage allocation to AOB is the proportion of DUE growth to the total DUEs in 2040 (see Table 2).
Source: DKS Associates, 2017

6.4 Summary of Cost Allocation

Table 9 summarizes the allocation of the cost for each of the selected projects that will have funding from the North Richmond AOB Program.

The County has various methods for funding transportation improvements within the North Richmond AOB boundary. While the North Richmond AOB fee program is one method, additional funding will need to be obtained from Federal, State and local grants (such as ATP, SRTS, BTA, etc.) or other sources to fund the cost of the improvements not allocated to new development in the North Richmond AOB. On an on-going basis, the County will assess the unconstructed projects on the AOB project list and determine project priorities. As enough funding becomes available from all sources to implement "priority" projects, the County will implement those projects.

Table 9: Allocation of Project Costs to North Richmond AOB Program

Roadway/ Project	Project Number	Location	Recommended Project	Estimated Total Cost	Percent Allocated to AOB	Cost Allocated to AOB
Pittsburg Avenue	NR1	Intersection with Richmond Parkway	Intersection Improvements	$1,183,000	7.32	$86,637
Market Avenue Complete Streets Project	NR3	Between Fred Jackson Way and the AOB Boundary (east of railroad tracks)	Pedestrian Improvements, Traffic Calming	$6,544,000	69.24	$4,531,102
	NR10	Between Fred Jackson Way and 7th Street	Traffic Calming Including Truck Traffic			
Fred Jackson Way Complete Streets Project	NR4/ NR7	Between Chesley Avenue and Parr Boulevard	Pedestrian and Bicycle Improvements	$5,345,000	69.24	$3,700,908
	NR9	Intersection with Chesley Avenue	Traffic Calming Including Truck Traffic			
Parr Boulevard Complete Streets Project	NR5	Between Richmond Parkway and AT&SF railroad tracks	Safety, Bicycle and Pedestrian Improvements	$5,527,000	33.91	$1,874,437
Brookside Drive Complete Streets Project	NR6	Between Central Street and AT&SF railroad tracks	Safety, Bicycle and Pedestrian Improvements	$4,892,000	40.17	$1,964,974
Truck Bypass	NR8	Between Market Avenue and Parr Boulevard	Truck Route	$28,453,000	69.24	$19,701,016
Secondary Access to Verde Elementary School	NR11	To be determined	Circulation and Safety Improvements	$2,597,000	69.24	$1,798,177
Central Street	NR12	Between Brookside Drive and Pittsburg Avenue	Safety, Bicycle and Pedestrian Improvements	$1,013,000	69.24	$701,407
Pittsburg Avenue	NR13	Between Richmond Parkway and Fred Jackson Way	Safety, Bicycle and Pedestrian Improvements	$2,208,000	69.24	$1,528,832
Goodrick Avenue	NR14	Between Parr Boulevard and AOB Boundary (550' S of Richmond Parkway)	Safety, Bicycle and Pedestrian Improvements	$1,695,000	69.24	$1,173,627
Chesley Avenue	NR15	Between Fred Jackson Way and AOB Boundary	Traffic Calming	$143,000	69.24	$99,014
			Total	**$59,600,000**	**62.35**	**$37,160,131**

Source: DKS Associates, 2017

7. Method for Calculating Fees

Land Use Categories

The calculation of fees for the AOB Program Updates will be based on the general land use categories that can be derived for all areas of the county from CCTA's travel demand model. These general categories are the following:

Land Use Type	Units
Single-Family	Dwelling units (DU)
Multi-Family	Dwelling units (DU)
Commercial/Retail	1,000 Sq. Ft.
Office	1,000 Sq. Ft
Industrial	1,000 Sq. Ft

Dwelling Unit Equivalents

In the allocation of costs to various types of development, each development type will be assigned a "dwelling unit equivalent" or "DUE" rate. DUEs are numerical measures of how the trip-making characteristics of a land use compare to a typical single-family residential unit, which is assigned a DUE of 1. Land uses that have greater overall traffic impacts than a typical single-family residential unit are assigned values greater than 1, while land uses with lower overall traffic impacts than a typical single-family residential unit are assigned DUE values less than 1.

DUEs are developed by comparing both the trip generation and trip length characteristics of various land uses to those same rates for a typical single-family residential unit. Since roadway needs are primarily based on traffic flows and conditions during the PM peak hour on an average weekday, the DUEs reflect the relative trip generation for the peak hour. Also considered in the calculation of DUEs are "percent new" trips since some of the vehicles attracted to non-residential uses would have been on the roadway system regardless of the presence of the traffic generated by the new development. Average trip lengths for the remaining "primary" trips generated by a development are then utilized to better reflect overall impact of longer trips on the County's roadway system.

The DUE rates will thus be based on estimates of the average vehicle-miles of travel (VMT) generated during the PM peak hour for each general land use type. The DUE rates that will be used to estimate the North Richmond AOB fees are shown in **Table 10**.

Table 10: Dwelling Unit Equivalent (DUE) Rates

Land Use Category	PM Peak Hour Trip Rate per Unit[1]	Unit	Trip Length (miles)[2]	Percent New trips[2]	VMT per Unit	DUE per Unit
Singe Family	1.01	Dwelling Unit	5.0	100	5.050	1.00
Multi-Family	0.62		5.0	100	3.100	0.61
Retail	4.10	Square Feet	2.3	76	7.167	0.00142
Office	1.40		4.5	92	5.796	0.00115
Industrial	0.98		5.1	92	4.598	0.00091

[1] ITE Trip Generation 7th Edition
[2] ITE Journal, May 1992
Source: DKS Associates, 2017

Fee Calculation

The cost per DUE (i.e. cost for a typical single-family dwelling unit) is calculated by dividing the total costs allocated to new development in the AOB (methods described above) by the total growth in DUEs in the AOB by 2040 (see **Table 11**). The cost for each land use type is then based on its DUE rate. The nexus-based fee rates are shown in **Table 12**.

Table 11: Growth in DUEs

Land Use Category	Unit	Growth in Units[1]	DUE per Unit	Growth in DUEs
Singe Family	Dwelling Unit	81	1.00	81
Multi-Family		72	0.61	44
Retail	Square Feet	25,500	0.00142	36
Office		38,000	0.00115	44
Industrial		2,922,000	0.00091	2,659
			Total	**2,864**

[1] See Table 2: "Summary of Estimated Development 2010 to 2040 Growth"

Source: DKS Associates, 2017

Table 12: Nexus Based Fee Rates

Cost of Improvements Allocated to AOB Growth	$37,160,131
AOB Account Balance (as of January 2016)	$1,161,000
Unfunded Allocated Costs	$35,999,131
Growth in Dwelling Unit Equivalents (DUE's)	2,864
Cost per DUE	$12,569.44

Land Use	Units	Fee per Unit[1]
Single Family	Dwelling Unit	$12,569
Multi-Family	Dwelling Unit	$7,716
Retail	Square Foot	$17.84
Office	Square Foot	$14.43
Industrial	Square Foot	$11.44

[1]Fee per Unit = (Cost per DUE) x (DUE per Unit)
Source: DKS Associates, 2017

8. Nexus Analysis

A nexus analysis has been prepared on the North Richmond AOB Program in accordance with the procedural guidelines established in AB1600 which is codified in California Government Section 66000 *et seq*. These code sections set forth the procedural requirements for establishing and collecting development impact fees. These procedures require that "a reasonable relationship or nexus must exist between a governmental exaction and the purpose of the condition." Specifically, each local agency imposing a fee must:

- Identify the purpose of the fee;
- Identify how the fee is to be used;
- Determine how a reasonable relationship exists between the fee's use and the type of development project on which the fee is imposed;
- Determine how a reasonable relationship exists between the need for the public facility and the type of development project on which the fee is imposed; and,
- Demonstrate a reasonable relationship between the amount of the fee and the cost of public facility or portion of the public facility attributable to the development on which the fee is imposed.

8.1 Purpose of Fee

The purpose of the North Richmond AOB Program is to fund improvements to the County's major roadway, bicycle and pedestrian facilities needed to accommodate travel demand generated by new land development in the unincorporated portion of North Richmond AOB over the next 27 years (through 2040).

The North Richmond AOB Program will help meet the County's General Plan policies including maintenance of adequate levels of service and safety for roadway facilities. New development in the unincorporated portions of the North Richmond AOB will increase the demand for all modes of travel (including walking, biking, transit, automobile and truck/goods movement) and thus the need for improvements to transportation facilities. The North Richmond AOB Program will help fund transportation facilities necessary to accommodate new residential and non-residential development in the unincorporated portions of the North Richmond AOB.

8.2 Use of Fees

The fees from new development in the North Richmond AOB Program will be used to fund additions and improvements to the transportation system needed to accommodate future travel demand resulting from residential and non-residential development within the North Richmond AOB. The North Richmond AOB Program will help fund improvements to roadways (include the widening or extensions of arterial and collector roadways, intersection improvements and provision of shoulders and complete streets) bikeways and walkways plus fee program administration costs. The transportation improvements wholly or partially funded by the program are described in more detail in **Section 4.**

8.3 Relationship between use of Fees and Type of Development

Fee revenues generated by the North Richmond AOB Program will be used to develop the transportation improvements described in **Section 4**. All of these improvements increase the capacity, improve the safety, or facilitate the use of alternative modes (transit, bicycle, pedestrian) on those segments of the transportation system affected by new development. The results of the transportation modeling analysis summarized in this report demonstrate that these improvements either mitigate impacts from and/or provide benefits to new development.

8.4 Relationship between Need for Facility and Type of Development

The projected residential and non-residential development described in **Section 3** will add to the incremental need for transportation facilities by increasing the amount of demand on the transportation system. The transportation analysis presented in **Section 4** demonstrates that improvements are required

to minimize the negative impact on current levels of service caused by new development and/or accommodate the increased need for alternative transportation modes (transit, bicycle, pedestrian).

8.5 Relationship between Amount of Fees and the Cost of Facility Attributed to Development upon which Fee is Imposed

The basis for allocating improvement costs to development is described in **Section 6**. Construction of necessary transportation improvements will directly serve residential and non-residential development within the unincorporated portion of the AOB and will directly benefit development in those areas.

New development within the AOB is allocated a percentage of costs based on the number of new trips on a roadway segment or intersection that have either their origin or destination within the AOB divided by the total amount of trips from new development. The remaining percent of costs, reflecting new trips that have neither their origin nor destination in the AOB (through trips), are not allocated to development in the AOB. For facilities that have an "existing deficiency", the cost of the improvement that is allocated to the North Richmond AOB Program is modified to account for that deficiency.

The fee that a developer pays for a new residential unit or commercial building varies by the type of development based on its impact on the transportation system. Each development type is assigned a "dwelling unit equivalent" or "DUE" rate based on its estimated vehicle-miles of travel (VMT) per unit of development.

DUE's are numerical measures of how the trip-making characteristics of a land use compare to a single-family residential unit. DUE's were developed by comparing both the trip generation and trip length characteristics of various land uses to those of the single-family residential units. Since roadway needs are primarily based on traffic flows and conditions during the peak hour on an average weekday, the DUE's reflect the relative trip generation for the peak hour. Also considered in the calculation of DUE's are "percent new" trips. The DUE rates were thus based on estimates of the average vehicle-miles of travel (VMT) generated during the peak hour for each general land use type.

8.6 Current AOB Fund Balance

As of January 2016, the North Richmond AOB had a fund balance of approximately $1,161,000 (see **Table 12**). Those funds were collected based upon the projects on the 1994 North Richmond AOB project list (See **Table 1**); thus, the balance of $1,161,000 must be spent on projects that will "carry over" from the 1994 project list (Fred Jackson Way, Parr Boulevard, Brookside Drive). The cost attributable to new growth for the carry over projects exceeds the current fund balance.

Appendix A

Cost Estimates for Selected Projects in North Richmond AOB

Summary of Costs for Roadway and Intersection Projects
North Richmond Area of Benefit

Project #	Project Name	Cost
NR1	Richmond Parkway/Pittsburg Avenue Intersection Improvements	$ 1,183,000
NR3, NR10	Market Avenue Complete Streets Project	$ 6,544,000
NR4/NR7, NR9	Fred Jackson Way Complete Streets Project	$ 5,345,000
NR5	Parr Boulevard Complete Streets Project	$ 5,527,000
NR6	Brookside Drive Complete Streets Project	$ 4,892,000
NR8	Truck Route	$ 28,453,000
NR11	Verde Elementary School Circulation and Safety Improvements	$ 2,597,000
NR12	Central Street Safety, Bicycle, and Pedestrian Improvements	$ 1,013,000
NR13	Pittsburg Avenue Safety, Bicycle, and Pedestrian Improvements	$ 2,208,000
NR14	Goodrick Avenue Safety, Bicycle, and Pedestrian Improvements	$ 1,695,000
NR 15	Chesley Avenue Traffic Calming	$ 143,000

Total Cost of All North Richmond AOB Projects: $ 59,600,000

Transportation Engineering

Planning Cost Estimate

Contra Costa County Public Works Department

WO xxxx

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.

☐ Click here if this project is a surface treatment or overlay project.

Project Name: Richmond Parkway/Pittsburgh Avenue Intersection Improvements

Alternative:

Project Location: Intersection of Richmond Parkway and Pittsburgh Avenue

Project Description: Project will add WB left turn pocket along Pittburgh Avenue

Project Length (ft): 400

Date of Estimate: Apr. 12, 2017

Prepared by: T. Cao

Revision No.	0
Revision Date	
Revised by	

No.	Description	Quantity	Units	Unit Cost	Total
1	Construction Area Signs	6	EA	$ 550.00	$ 3,300
2	Traffic Control System	1	LS	$ 50,000.00	$ 50,000
3	Prepare Water Pollution Control Plan	1	LS	$ 10,000.00	$ 10,000
4	Remove Thermoplastic Traffic Stripe	800	LF	$ 2.00	$ 1,600
5	ADA Curb Ramps	2	EA	$ 15,000.00	$ 30,000
6	Clearing and Grubbing	1	LS	$ 30,000.00	$ 30,000
7	Saw Cut Pavement Edges	400	LF	$ 2.00	$ 800
8	Roadway Excavation	444	CY	$ 120.00	$ 53,280
9	Imported Material (Shoulder Backing)	28	TON	$ 45.00	$ 1,260
10	Class 2 Aggregate Base	532	TON	$ 35.00	$ 18,620
11	Hot Mix Asphalt (Type A)	870	TON	$ 140.00	$ 121,800
12	C.3 Provisions and Misc. Drainage	1	LS	$ 50,000.00	$ 50,000
13	Signal Head Relocation	1	EA	$ 75,000.00	$ 75,000
14	Thermoplastic Traffic Stripe - Det. 27B, Right Edge Line	800	LF	$ 2.00	$ 1,600
15	Mobilization	1	LS	$ 45,000.00	$ 45,000

OTHER COSTS BY PHASE:

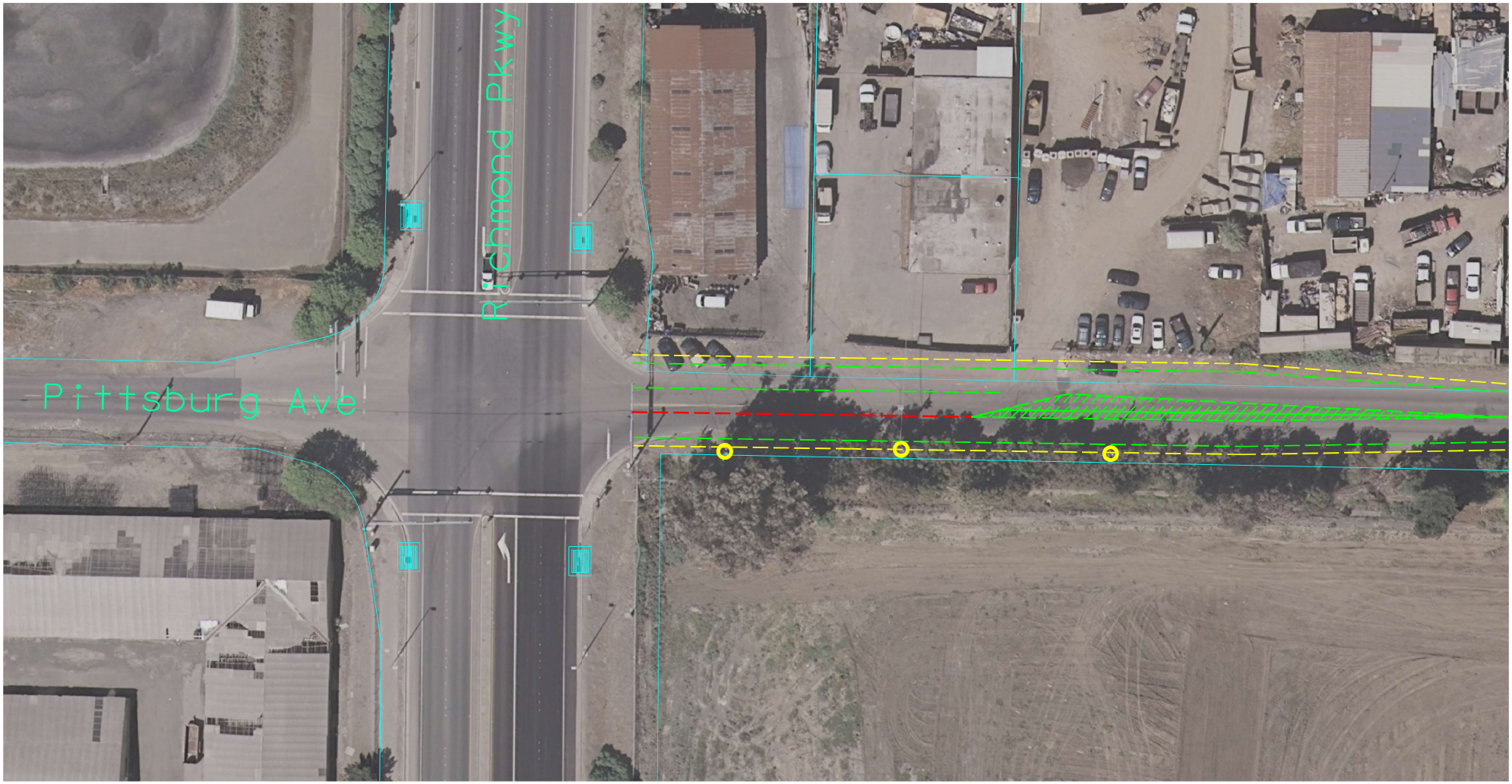
PLAN	Planning Engineering (TE)	$ 50,000
PE	Preliminary Engineering (Design/Survey)*	$ 148,000
	Utility Coordination (Design)	$ 30,000
	Environmental (Environmental, Real Property)	$ 50,000
R/W	R/W Engineering (Survey)	$ 50,000
	Real Property Labor	$ 45,000
	R/W Acquisition	$ 100,000
CON	Construction Engineering *	$ 99,000
	Environmental Monitoring and Mitigation Fees	$ 20,000
	SUBTOTAL of OTHER COSTS (ALL)	$ 592,000

CONTRACT ITEMS	$ 492,000
OTHER COSTS (CON)	$ 119,000
CONTINGENCY*	$ 99,000
SUBTOTAL (CON)	$ 710,000
SUBTOTAL (PLAN)	$ 50,000
SUBTOTAL (PE)	$ 228,000
SUBTOTAL (R/W)	$ 195,000
GRAND TOTAL	$ 1,183,000
CURRENT YEAR	2017
ESCALATION YEAR	2017
ESCALATION RATE	0.0%
➢ **TOTAL (in 2017 dollars)**	**$ 1,183,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

* Construction Engineering is 15% of contract items. ($20,000 min.)

* CONTINGENCY is 20% of contract items. ($10,000 min.)



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LEGEND:

- PROPOSED SHOULDER
- RIGHT OF WAY LINE/PARCEL LINE
- PROPOSED LANES
- PROPOSED CENTERLINE
- UTILITY POLE
- INLET

SCALE: 1" = 50'

Contra Costa County
Public Works
Department

255 GLACIER DRIVE MARTINEZ, CALIFORNIA 94553 PH: (925) 313-2000 FAX: (925) 313-2333

PROPOSED PROJECT LAYOUT

RICHMOND PKWY AT PITTSBURGH AVE INTERSECTION IMPROVEMENTS

FEDERAL ID NO.: | DB: TC | CB: MH | DATE: APR 2017 | SHEET 1 OF 1

Transportation Engineering

Planning Cost Estimate

Contra Costa County Public Works Department

NR3, NR10

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

[redacted]

Revision Date

No.	Description	Quantity	Units	Unit Cost	Total
	General Overhead-Related Construction Items				
1	Mobilization	1	LS	$ 441,000.00	$ 441,000
2	Stormwater protection plan	1	LS	$ 5,000.00	$ 5,000
3	Construction Area Signs	14	EA	$ 550.00	$ 7,700
4	Traffic Control System	1	LS	$ 60,000.00	$ 60,000
	General Construction Items				
5	Clearing and grubbing	1	LS	$ 50,000.00	$ 50,000
6	Remove existing pavement, sidewalks	24605	SF	$ 20.00	$ 492,100
7	Type "S1-6" Curb	3515	LF	$ 25.00	$ 87,875
8	ADA curb ramp	30	EA	$ 4,000.00	$ 120,000
9	Sidewalk	24605	SF	$ 15.00	$ 369,075
10	Saw Cut Pavement Edges	3515	LF	$ 2.00	$ 7,030
11	Roadside Sign	32	EA	$ 500.00	$ 16,000
12	Thermoplastic Traffic Stripe	5370	LF	$ 2.00	$ 10,740
13	Striping removal	4050	LF	$ 1.50	$ 6,075
14	Bulb Out	24	EA	$ 7,500.00	$ 180,000
15	Enhanced Crossings	13	EA	$ 10,000.00	$ 130,000
16	Storm Drainage Inlet	7	EA	$ 4,200.00	$ 29,400
17	Driveway Conforms	45	EA	$ 5,000.00	$ 225,000
18	Slurry seal	1	LS	$ 14,300.00	$ 14,300
	Decorative & Landscaping Related Items				
19	Trees	25	EA	$ 1,200.00	$ 30,000
20	Tree grates	25	EA	$ 600.00	$ 15,000
21	Tree stakes	50	EA	$ 500.00	$ 25,000
22	Irrigation / Water Connection	1	LS	$ 200,000.00	$ 200,000
	Traffic Calming Elements				
23	Saw Cut Pavement Edges	600	LF	$ 2.00	$ 1,200
24	Clearing and Grubbing	1	LS	$ 15,000.00	$ 15,000
25	Remove Ex. Sidewalk, Curb/Gutter, Pavement	70300	SF	$ 20.00	$ 1,406,000
26	Adjust Vaults to grade (Coordinate with EBMUD)	6	LS	$ 1,000.00	$ 6,000
27	Minor Concrete (Type S1-6 Curb)	2440	LF	$ 25.00	$ 61,000
28	Minor Concrete (Sidewalk, including AB)	12200	SF	$ 15.00	$ 183,000
29	Minor Concrete (Modified Case B Curb Ramp)	37	EA	$ 4,200.00	$ 155,400
30	Crosswalk Striping	8	EA	$ 1,000.00	$ 8,000
31	Driveway Conform	42	EA	$ 5,000.00	$ 210,000
32	Hot Mix Asphalt (Type A - 0.25')	1125	TON	$ 152.00	$ 171,000
33	Curb Bulb-out	12	LS	$ 7,500.00	$ 90,000
34	Misc Drainage (adjust inlet)	7	LS	$ 3,000.00	$ 21,000

PLAN	Planning Engineering (TE)	$ 150,000
PE	Preliminary Engineering (Design/Survey)*	$ 425,000
	Utility Coordination (Design)	$ 125,000
	Environmental (Environmental, Real Property)	$ 250,000
R/W	R/W Engineering (Survey)	$ -
	Real Property Labor	$ 30,000
	R/W Acquisition	$ -
CON	Construction Engineering *	$ 425,000
	Environmental Monitoring and Mitigation Fees	$ 75,000
	SUBTOTAL of OTHER COSTS (ALL)	$ 1,480,000

CONTRACT ITEMS	$ 4,403,000
OTHER COSTS (CON)	$ 500,000
CONTINGENCY*	$ 661,000
SUBTOTAL (CON)	$ 5,564,000
SUBTOTAL (PLAN)	$ 150,000
SUBTOTAL (PE)	$ 800,000
SUBTOTAL (R/W)	$ 30,000
GRAND TOTAL	$ 6,544,000
CURRENT YEAR	2017
ESCALATION YEAR	2017
ESCALATION RATE	0.0%
➢ **TOTAL (in 2017 dollars)**	**$ 6,544,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project NR3,NR10: Market Avenue Complete Streets Project

Transportation Engineering

Planning Cost Estimate

Contra Costa County Public Works Department

WO 4153

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.

☐ Click here if this project is a surface treatment or overlay project.

Project Name: Fred Jackson Way Complete Streets Project
Alternative: 1 (Grove to Brookside)
Chesley-Wildcat: 8' sidewalk on both sides; Wildcat-Parr: 5' sidewalk on east, Class II bike lanes
Traffic calming measures at the intersectino of Fred Jackson Way and Chesley Avenue

Project Location: Fred Jackson Way between Chesley Ave and Parr Blvd.
Assumptions: R=5 , TI=6.5

Project Length (ft): 3270

Date of Estimate: Mar. 15, 2017

Prepared by: Trevor McGuire

Revision No.	0
Revision Date	
Revised by	

No.	Description	Quantity	Units	Unit Cost	Total
	General Overhead-Related Construction Items				
1	Mobilization	1	LS	$ 296,000.00	$ 296,000
2	Stormwater protection plan	1	LS	$ 5,000.00	$ 5,000
3	Construction Area Signs	12	EA	$ 550.00	$ 6,600
4	Traffic Control System	1	LS	$ 60,000.00	$ 60,000
5	Archaeological Monitoring	1	LS	$ 150,000.00	$ 150,000
6	Contaminated Soil Treatment	1	LS	$ 70,000.00	$ 70,000
7	Contaminated Soil Disposal	596	CY	$ 30.00	$ 17,889
	General Construction Items				
8	Clearing and grubbing	1	LS	$ 50,000.00	$ 50,000
9	Remove fence	1150	LF	$ 12.00	$ 13,800
10	Remove existing pavement, sidewalks	31840	SF	$ 20.00	$ 636,800
11	Type "S1-6" Curb	3980	LF	$ 25.00	$ 99,500
12	Sidewalk	45490	SF	$ 15.00	$ 682,350
13	Saw Cut Pavement Edges	5130	LF	$ 2.00	$ 10,260
14	Roadway Excavation	493	CY	$ 125.00	$ 61,625
15	Class 2 Aggregate Base	798	TON	$ 45.00	$ 35,910
16	Hot Mix Asphalt (Type A)	143	TON	$ 152.00	$ 21,736
17	Roadside Sign	26	EA	$ 500.00	$ 13,000
18	Thermoplastic Traffic Stripe	18140	LF	$ 2.00	$ 36,280
19	Striping removal	18140	LF	$ 1.50	$ 27,210
20	Bulb Out	10	EA	$ 7,500.00	$ 75,000
21	Enhanced Crossings	9	EA	$ 10,000.00	$ 90,000
22	Storm Drainage Inlet	18	EA	$ 4,200.00	$ 75,600
23	Driveway Conforms	39	EA	$ 5,000.00	$ 195,000
24	Slurry seal	1	LS	$ 26,500.00	$ 26,500
	Decorative & Landscaping Related Items				
25	Trees	37	EA	$ 1,200.00	$ 44,400
26	Tree grates	37	EA	$ 600.00	$ 22,200
27	Tree stakes	74	EA	$ 500.00	$ 37,000
28	Irrigation / Water Connection	1	LS	$ 200,000.00	$ 200,000
	Fred Jackson Way & Chesley Avenue Traffic Calming				
29	Saw Cut Pavement Edges	100	LF	$ 2.00	$ 200
30	Clearing and Grubbing	1	LS	$ 10,000.00	$ 10,000
31	Remove existing curb, sidewalks	1400	SF	$ 20.00	$ 28,000
32	Type "S1-6" Curb	240	LF	$ 25.00	$ 6,000
33	Sidewalk	1680	SF	$ 15.00	$ 25,200
34	Curb Ramp (Modified Case B)	4	EA	$ 4,200.00	$ 16,800
35	Stripe crosswalk	4	EA	$ 1,000.00	$ 4,000
36	Driveway Conforms	2	EA	$ 5,000.00	$ 10,000
37	Remove asphalt	1000	SY	$ 3.50	$ 3,500
38	Hot Mix Asphalt (Type A)	200	TON	$ 152.00	$ 30,400
39	Bulb Out	4	EA	$ 7,500.00	$ 30,000
40	Storm Drainage Inlet	5	EA	$ 4,200.00	$ 21,000
41	Landscaping	1	LS	$ 8,200.00	$ 8,200

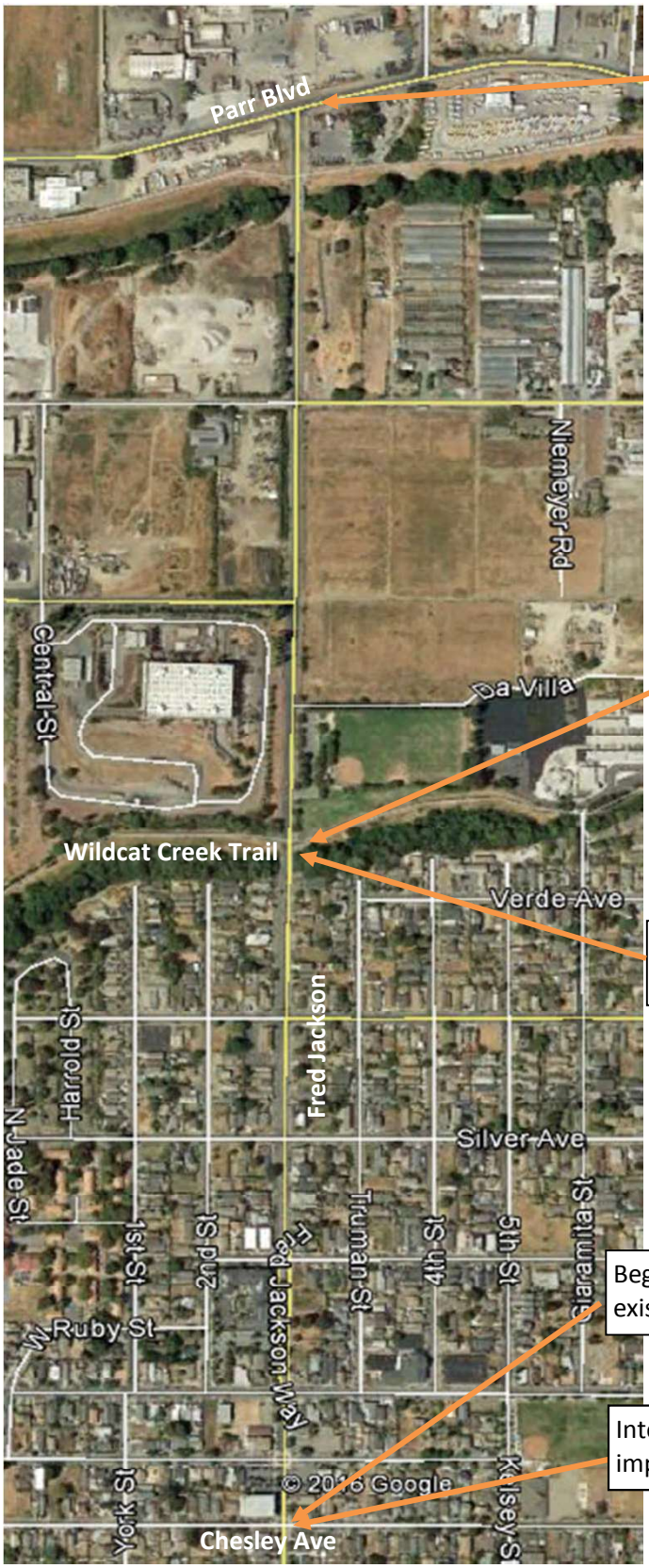
OTHER COSTS BY PHASE:

PLAN	Planning Engineering (TE)	$ 150,000
PE	Preliminary Engineering (Design/Survey)*	$ 500,000
	Utility Coordination (Design)	$ 100,000
	Environmental (Environmental, Real Property)	$ 300,000
R/W	R/W Engineering (Survey)	$ 150,000
	Real Property Labor	$ 150,000
	R/W Acquisition	$ 100,000
CON	Construction Engineering *	$ 400,000
	Environmental Monitoring and Mitigation Fees	$ 100,000
	SUBTOTAL of OTHER COSTS (ALL)	$ 1,950,000

CONTRACT ITEMS	$ 2,952,000
OTHER COSTS (CON)	$ 500,000
CONTINGENCY*	$ 443,000
SUBTOTAL (CON)	$ 3,895,000
SUBTOTAL (PLAN)	$ 150,000
SUBTOTAL (PE)	$ 900,000
SUBTOTAL (R/W)	$ 400,000
GRAND TOTAL	$ 5,345,000
CURRENT YEAR	2017
ESCALATION YEAR	2017
ESCALATION RATE	0.0%
➢ **TOTAL (in 2017 dollars)**	**$ 5,345,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project NR4/NR7, NR9: Fred Jackson Way Complete Streets Project



End new bike lane and sidewalk

Begin new bike lane and sidewalk

End widening existing sidewalk

Begin widening existing sidewalk

Intersection improvemens

DKS Associates — **Planning Cost Estimate**

1970 Broadway Ste 740, Oakland CA 94612 — **Project Number** **NR5**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Parr Boulevard Complete Streets Project
Project Location: Parr Boulevard from Richmond Parkway to AT&SF Railroad Tracks

Description The project will enhance vehicle, bicycle, and pedestrian safety by widening the roadway to the standard width and providing bike lanes and sidewalks.

Project Length (ft): 4265

Date of Estimate: Feb. 19, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	85300	SF	$3.00	$ 255,900
2	Earthwork	42650	SF	$4.00	$ 170,600
3	Class 2 Aggregate Base	3159	CY	$65.00	$ 205,352
4	Hot Mix Asphalt (Type A)	1407	Ton	$125.00	$ 175,931
5	Curb and gutter	8530	LF	$35.00	$ 298,550
6	Sidewalk	42650	SF	$15.00	$ 639,750
7	Stripe bike lanes and pavement legends	8530	LF	$4.00	$ 34,120
8	Misc. drainage modifications	1	LS	$267,000.00	$ 267,000
9	Temporary traffic control	1	LS	$76,200.00	$ 76,200
10	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
11	Mobilization	1	LS	$ 212,900.00	$ 212,900

Project Number **NR5**

Planning Engineering (TE)	$ 320,000
Preliminary Engineering (Design/Survey)*	$ 937,000
Utility Coordination (Design)	$ 200,000
Environmental (Environmental, Real Property)	$ 310,000
R/W Engineering (Survey)	$ 50,000
Real Property Labor	$ 100,000
R/W Acquisition	$ 330,225
Construction Engineering *	$ 352,000
Environmental Monitoring and Mitigation Fees	$ -
SUBTOTAL of OTHER COSTS (ALL)	$ 2,599,225

Contract Items	$ 2,341,900
Other Costs (CON)	$ 352,000
Contingency*	$ 586,000
Subtotal (Contract Items)	$ 3,279,900
Subtotal (Plan)	$ 320,000
Subtotal (PE)	$ 1,447,000
Subtotal (R/W)	$ 480,225
Grand Total	$ 5,527,125
Current Year	2016
Escalation Year	2016
Escalation Rate	0.0%
➢ **TOTAL (in 2016 dollars)**	**$ 5,527,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR5: Parr Boulevard Complete Streets Project

DKS Associates — **Planning Cost Estimate**

1970 Broadway Ste 740, Oakland CA 94612 — **Project Number** **NR6**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Brookside Drive Complete Streets Project
Project Location: Brookside Drive from Central Street to AT&SF Railroad Tracks

Description The project will enhance vehicle, bicycle, and pedestrian safety by widening the roadway to the standard width and providing bike lanes and sidewalks.

Project Length (ft): 3100

Date of Estimate: Feb. 19, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	80600	SF	$3.00	$ 241,800
2	Relocate existing street light poles	8	EA	$2,500.00	$ 20,000
3	Earthwork	49600	SF	$4.00	$ 198,400
4	Class 2 Aggregate Base	3674	CY	$65.00	$ 238,815
5	Hot Mix Asphalt (Type A)	1637	Ton	$125.00	$ 204,600
6	Curb and gutter	6200	LF	$35.00	$ 217,000
7	Sidewalk	31000	SF	$15.00	$ 465,000
8	Stripe bike lanes and pavement legends	6200	LF	$4.00	$ 24,800
9	Misc. drainage modifications	1	LS	$238,600.00	$ 238,600
10	Temporary traffic control	1	LS	$67,400.00	$ 67,400
11	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
12	Mobilization	1	LS	$ 192,200.00	$ 192,200

Project Number **NR6**

Planning Engineering (TE)	$ 289,000	Contract Items	$ 2,114,200
Preliminary Engineering (Design/Survey)*	$ 846,000	Other Costs (CON)	$ 318,000
Utility Coordination (Design)	$ 180,000	Contingency*	$ 529,000
Environmental (Environmental, Real Property)	$ 280,000	Subtotal (Contract Items)	$ 2,961,200
R/W Engineering (Survey)	$ 50,000	Subtotal (Plan)	$ 289,000
Real Property Labor	$ 100,000	Subtotal (PE)	$ 1,306,000
R/W Acquisition	$ 186,000	Subtotal (R/W)	$ 336,000
Construction Engineering *	$ 318,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 2,249,000		
		Grand Total	$ 4,892,200
		Current Year	2016
		Escalation Year	2016
		Escalation Rate	0.0%
		➢ **TOTAL (in 2016 dollars)**	**$ 4,892,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR6: Brookside Drive Complete Streets Project

DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate

Project Number **NR8**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

[redacted]

The project [redacted] and Parr Boulevard.

[redacted]

Revision Date

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	133440	SF	$3.00	$ 400,320
2	Earthwork	100080	SF	$5.00	$ 500,400
3	Class 2 Aggregate Base	7413	CY	$65.00	$ 481,867
4	Hot Mix Asphalt (Type A)	3303	Ton	$125.00	$ 412,830
5	Curb and gutter	5220	LF	$35.00	$ 182,700
6	Sidewalk	41760	SF	$8.00	$ 334,080
7	Bridge over Wildcat Creek	20800	SF	$200.00	$ 4,160,000
8	Bridge over San Pablo Creek	12800	SF	$200.00	$ 2,560,000
9	Slurry seal on Brookside Drive	1787	SY	$1.00	$ 1,787
10	Striping	10440	LF	$3.00	$ 31,320
11	Signage	1	LS	$5,000.00	$ 5,000
12	Misc. drainage improvements	1	LS	$1,360,500.00	$ 1,360,500
13	Temporary traffic control	1	LS	$25,000.00	$ 25,000
14	Landscaping	1	LS	$453,500.00	$ 453,500
15	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
16	Mobilization	1	LS	$ 1,091,500.00	$ 1,091,500

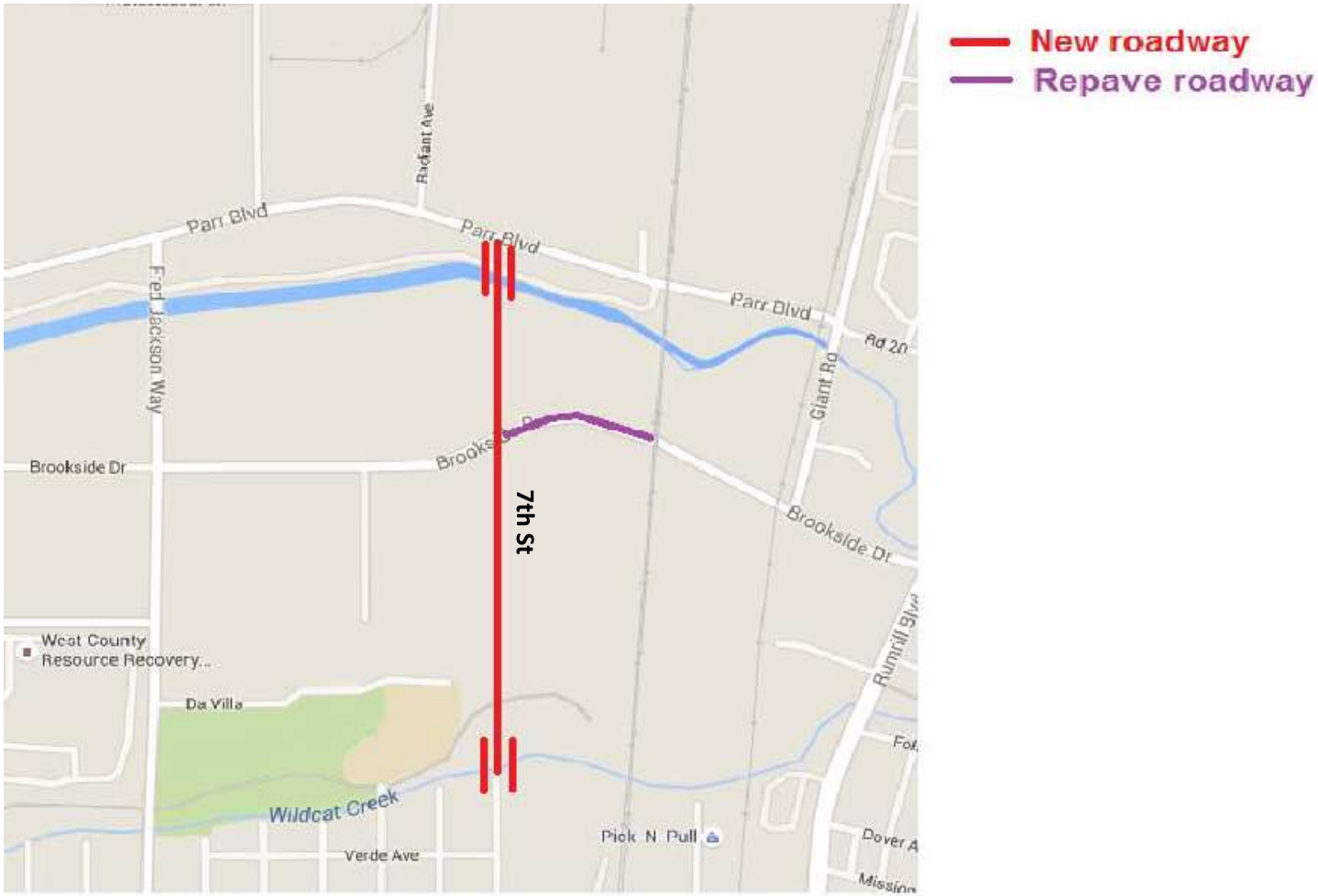
Project Number **NR8**

Planning Engineering (TE)	$ 1,638,000
Preliminary Engineering (Design/Survey)*	$ 4,803,000
Utility Coordination (Design)	$ 520,000
Environmental (Environmental, Real Property)	$ 1,770,000
R/W Engineering (Survey)	$ 100,000
Real Property Labor	$ 150,000
R/W Acquisition	$ 2,662,200
Construction Engineering *	$ 1,801,000
Environmental Monitoring and Mitigation Fees	$ -
SUBTOTAL of OTHER COSTS (ALL)	$ 13,444,200

Contract Items	$ 12,006,500
Other Costs (CON)	$ 1,801,000
Contingency*	$ 3,002,000
Subtotal (Contract Items)	$ 16,809,500
Subtotal (Plan)	$ 1,638,000
Subtotal (PE)	$ 7,093,000
Subtotal (R/W)	$ 2,912,200
Grand Total	$ 28,452,700
Current Year	2016
Escalation Year	2016
Escalation Rate	0.0%
➢ **TOTAL (in 2016 dollars)**	**$ 28,453,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR8: North Richmond Truck Bypass



DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **NR11**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Verde Elementary School Circulation and Safety Improvements
Project Location:

Description The project will enhance circulation and safety for pedestrians, bicyclists, and student drop-offs by providing a second access point to the school site.

Project Length (ft): 1600

Date of Estimate: Mar. 11, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

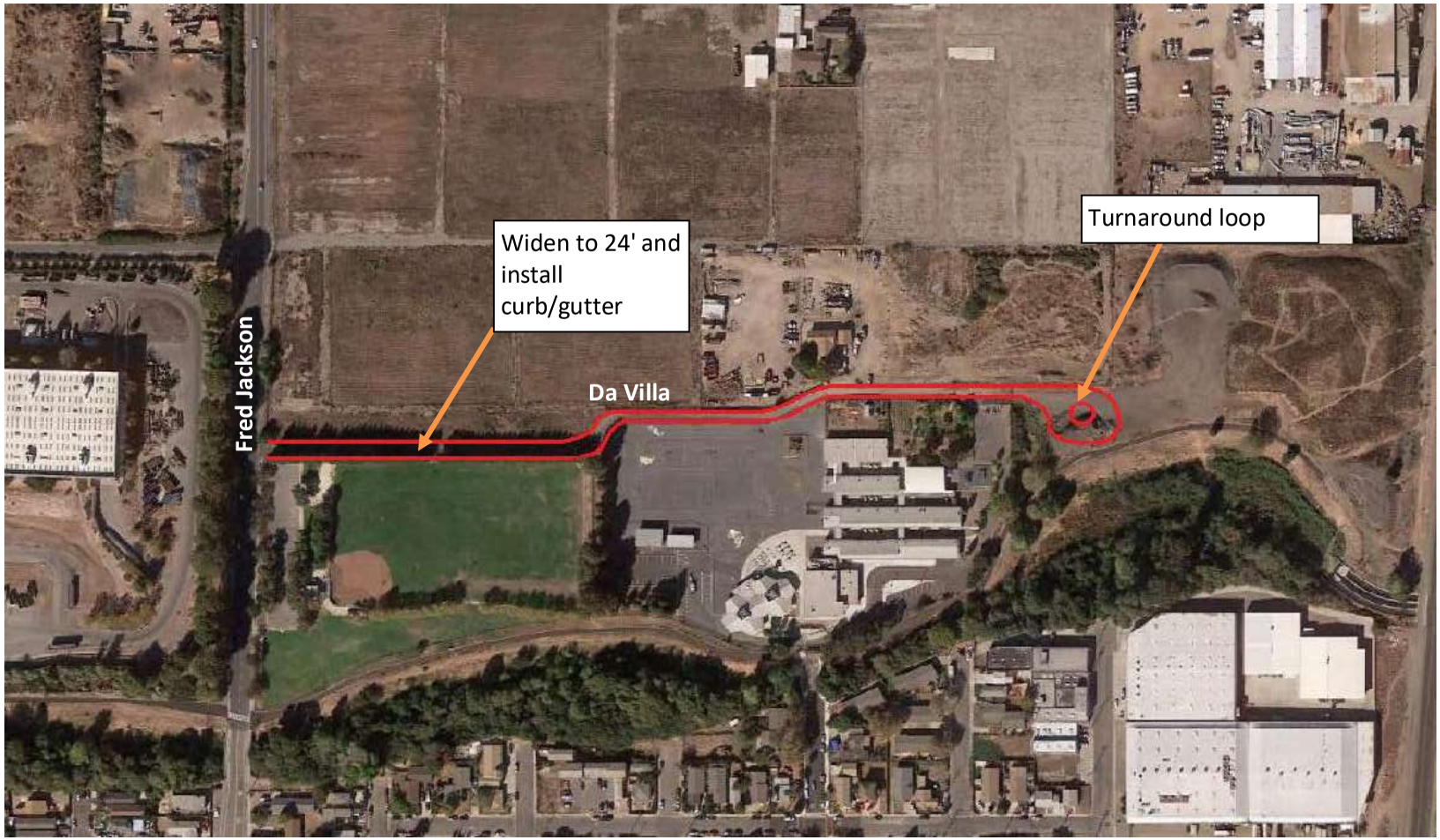
No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	17600	SF	$3.00	$ 52,800
2	Earthwork	17600	SF	$4.00	$ 70,400
3	Class 2 Aggregate Base	1304	CY	$65.00	$ 84,741
4	Hot Mix Asphalt (Type A)	436	Ton	$125.00	$ 54,450
5	Curb and gutter	3200	LF	$35.00	$ 112,000
6	Sidewalk	22400	SF	$8.00	$ 179,200
7	Striping	4800	LF	$3.00	$ 14,400
8	Drainage	1	LS	$85,200.00	$ 85,200
9	Temporary traffic control	1	LS	$14,200.00	$ 14,200
10	Landscaping	1	LS	$28,400.00	$ 28,400
11	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
12	Mobilization	1	LS	$ 70,200.00	$ 70,200

Project Number **NR11**

Planning Engineering (TE)	$ 106,000	Contract Items	$ 772,200
Preliminary Engineering (Design/Survey)*	$ 309,000	Other Costs (CON)	$ 116,000
Utility Coordination (Design)	$ 70,000	Contingency*	$ 194,000
Environmental (Environmental, Real Property)	$ 100,000	Subtotal (Contract Items)	$ 1,082,200
R/W Engineering (Survey)	$ 50,000	Subtotal (Plan)	$ 106,000
Real Property Labor	$ 100,000	Subtotal (PE)	$ 479,000
R/W Acquisition	$ 780,000	Subtotal (R/W)	$ 930,000
Construction Engineering *	$ 116,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 1,631,000		
		Grand Total	$ 2,597,200
		Current Year	2016
		Escalation Year	2016
		Escalation Rate	0.0%
		➢ **TOTAL (in 2016 dollars)**	**$ 2,597,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR11: Verde Elementary School Circulation and Safety Improvements




New r/w needed
Fred Jackson Way
Richmond
Verde Elementary School
Wildcat Creek Regional Trl

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **NR12**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Central Street Safety, Bicycle, and Pedestrian Improvements
Project Location: Central Street from Brookside Drive to Pittsburg Avenue

Description The project will enhance vehicle, bicycle, and pedestrian safety by widening the roadway to the standard width and providing bike lanes and sidewalks.

Project Length (ft): 730

Date of Estimate: Oct. 4, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	8760	SF	$3.00	$ 26,280
2	Earthwork	8760	SF	$4.00	$ 35,040
3	Class 2 Aggregate Base	649	CY	$65.00	$ 42,178
4	Hot Mix Asphalt (Type A)	289	Ton	$125.00	$ 36,135
5	Curb and gutter	1460	LF	$35.00	$ 51,100
6	Sidewalk	7300	SF	$8.00	$ 58,400
7	ADA Curb Ramp	2	EA	$4,200.00	$ 8,400
8	Stripe bike lanes and pavement legends	1460	LF	$4.00	$ 5,840
9	Misc. drainage modifications	1	LS	$52,700.00	$ 52,700
10	Temporary traffic control	1	LS	$13,200.00	$ 13,200
11	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
12	Mobilization	1	LS	$ 33,500.00	$ 33,500

Project Number **NR12**

Planning Engineering (TE)	$ 51,000
Preliminary Engineering (Design/Survey)*	$ 148,000
Utility Coordination (Design)	$ 30,000
Environmental (Environmental, Real Property)	$ 50,000
R/W Engineering (Survey)	$ 50,000
Real Property Labor	$ 75,000
R/W Acquisition	$ 73,000
Construction Engineering *	$ 74,000
Environmental Monitoring and Mitigation Fees	$ -
SUBTOTAL of OTHER COSTS (ALL)	$ 551,000

Contract Items	$ 368,500
Other Costs (CON)	$ 74,000
Contingency*	$ 93,000
Subtotal (Contract Items)	$ 535,500
Subtotal (Plan)	$ 51,000
Subtotal (PE)	$ 228,000
Subtotal (R/W)	$ 198,000
Grand Total	$ 1,012,500
Current Year	2016
Escalation Year	2016
Escalation Rate	0.0%
➢ **TOTAL (in 2016 dollars)**	**$ 1,013,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR12: Central Street Safety, Bicycle, and Pedestrian Improvements

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **NR13**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Pittsburg Avenue Safety, Bicycle, and Pedestrian Improvements
Project Location: Pittsburg Avenue from Richmond Parkway to Fred Jackson Way

Description The project will enhance vehicle, bicycle, and pedestrian safety by providing bike lanes and sidewalks.

Project Length (ft): 1890

Date of Estimate: Oct. 4, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	18900	SF	$3.00	$ 56,700
2	Earthwork	18900	SF	$4.00	$ 75,600
3	Class 2 Aggregate Base	1400	CY	$65.00	$ 91,000
4	Hot Mix Asphalt (Type A)	624	Ton	$125.00	$ 77,963
5	Curb and gutter	3780	LF	$35.00	$ 132,300
6	Sidewalk	18900	SF	$8.00	$ 151,200
7	ADA Curb Ramp	6	EA	$4,200.00	$ 25,200
8	Stripe bike lanes and pavement legends	3780	LF	$4.00	$ 15,120
9	Misc. drainage modifications	1	LS	$125,000.00	$ 125,000
10	Temporary traffic control	1	LS	$31,300.00	$ 31,300
11	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
12	Mobilization	1	LS	$ 78,700.00	$ 78,700

Project Number **NR13**

Planning Engineering (TE)	$ 119,000	Contract Items	$ 865,700
Preliminary Engineering (Design/Survey)*	$ 347,000	Other Costs (CON)	$ 130,000
Utility Coordination (Design)	$ 80,000	Contingency*	$ 217,000
Environmental (Environmental, Real Property)	$ 110,000	Subtotal (Contract Items)	$ 1,212,700
R/W Engineering (Survey)	$ 50,000	Subtotal (Plan)	$ 119,000
Real Property Labor	$ 100,000	Subtotal (PE)	$ 537,000
R/W Acquisition	$ 189,000	Subtotal (R/W)	$ 339,000
Construction Engineering *	$ 130,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 1,125,000		
		Grand Total	$ 2,207,700
		Current Year	2016
		Escalation Year	2016
		Escalation Rate	0.0%
		➢ **TOTAL (in 2016 dollars)**	**$ 2,208,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR13: Pittsburg Avenue Safety, Bicycle, and Pedestrian Improvements

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **NR14**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Goodrick Avenue Safety, Bicycle, and Pedestrian Improvements
Project Location: Goodrick Avenue from Parr Boulevard to AOB Limit (550' S of Richmond Pkwy)

Description The project will enhance vehicle, bicycle, and pedestrian safety by providing bike lanes and sidewalks.

Project Length (ft): 1410

Date of Estimate: Oct. 4, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	14100	SF	$3.00	$ 42,300
2	Earthwork	14100	SF	$4.00	$ 56,400
3	Class 2 Aggregate Base	1044	CY	$65.00	$ 67,889
4	Hot Mix Asphalt (Type A)	465	Ton	$125.00	$ 58,163
5	Curb and gutter	2820	LF	$35.00	$ 98,700
6	Sidewalk	14100	SF	$15.00	$ 211,500
7	ADA Curb Ramp	5	EA	$4,200.00	$ 21,000
8	Stripe bike lanes and pavement legends	2820	LF	$4.00	$ 11,280
9	Misc. drainage modifications	1	LS	$113,400.00	$ 113,400
10	Temporary traffic control	1	LS	$28,400.00	$ 28,400
11	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
12	Mobilization	1	LS	$ 71,500.00	$ 71,500

Project Number **NR14**

Planning Engineering (TE)	$ 108,000	Contract Items	$ 786,500
Preliminary Engineering (Design/Survey)*	$ 315,000	Other Costs (CON)	$ 118,000
Utility Coordination (Design)	$ 70,000	Contingency*	$ 197,000
Environmental (Environmental, Real Property)	$ 100,000	Subtotal (Contract Items)	$ 1,101,500
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 108,000
Real Property Labor	$ -	Subtotal (PE)	$ 485,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 118,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 711,000		
		Grand Total	$ 1,694,500
		Current Year	2016
		Escalation Year	2016
		Escalation Rate	0.0%
		➢ **TOTAL (in 2016 dollars)**	**$ 1,695,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR14: Goodrick Avenue Safety, Bicycle, and Pedestrian Improvements

DKS Associates — **Planning Cost Estimate**

1970 Broadway Ste 740, Oakland CA 94612 — **Project Number** **NR15**

☐ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.

☐ Click here if this project is a surface treatment or overlay project.

Project Name: Chesley Avenue Traffic Calming

Project Location: Chesley Avenue from Fred Jackson Way to AOB Boundary (railroad tracks)

Description Project will add speed tables along Chesley Avenue to calm traffic.

Project Length (ft): 1900

Date of Estimate: Oct. 5, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Install speed tables	7	EA	$ 8,170.00	$ 57,190
2	Temporary traffic control	1	LS	$ 3,000.00	$ 3,000
3	Mobilization	1	LS	$ 6,000.00	$ 6,000

Project Number **NR15**

Planning Engineering (TE)	$ 10,000	Contract Items	$ 66,000
Preliminary Engineering (Design/Survey)*	$ 30,000	Other Costs (CON)	$ 20,000
Utility Coordination (Design)	$ -	Contingency*	$ 17,000
Environmental (Environmental, Real Property)	$ -	Subtotal (Contract Items)	$ 103,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 10,000
Real Property Labor	$ -	Subtotal (PE)	$ 30,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 20,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 60,000		
		Grand Total	$ 143,000
		Current Year	2016
		Escalation Year	2016
		Escalation Rate	0.0%
		➢ **TOTAL (in 2016 dollars)**	**$ 143,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

* Construction Engineering is 15% of contract items. ($20,000 min.)

* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project NR15: Chesley Avenue Traffic Calming